UNFCCC and International and National Commitments

Training Programme for Bhutanese Policymakers and Researchers

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Contents

1. History of Climate Change Negotiation at Multilateral Level

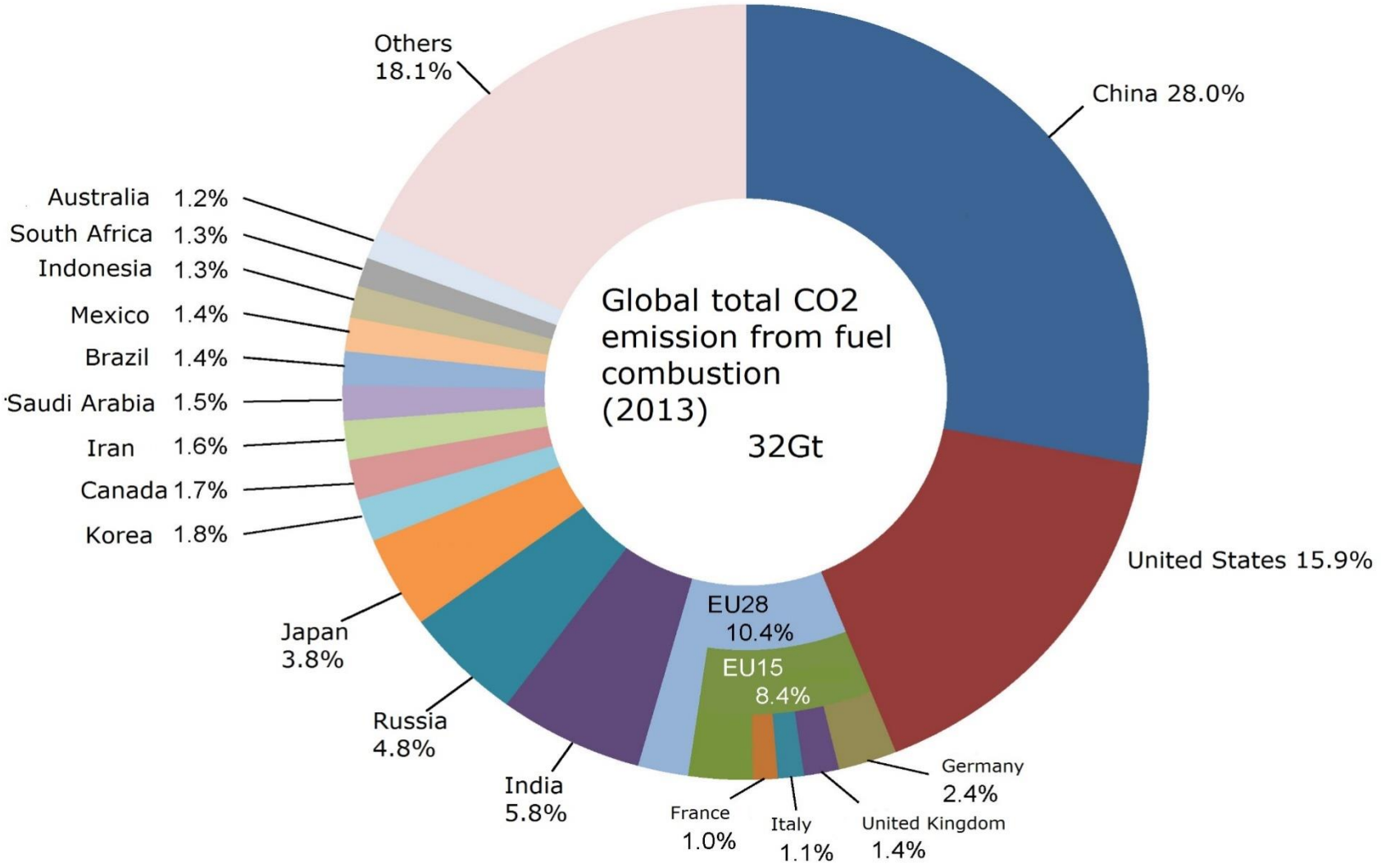
Three types of responses towards climate change

- Mitigation : Actions to minimize additional global warming to occur in the future. This is equal to actions to reduce GHG emissions.

- Adaptation: Actions to minimize damages that are likely to occur due to adverse impact of climate change

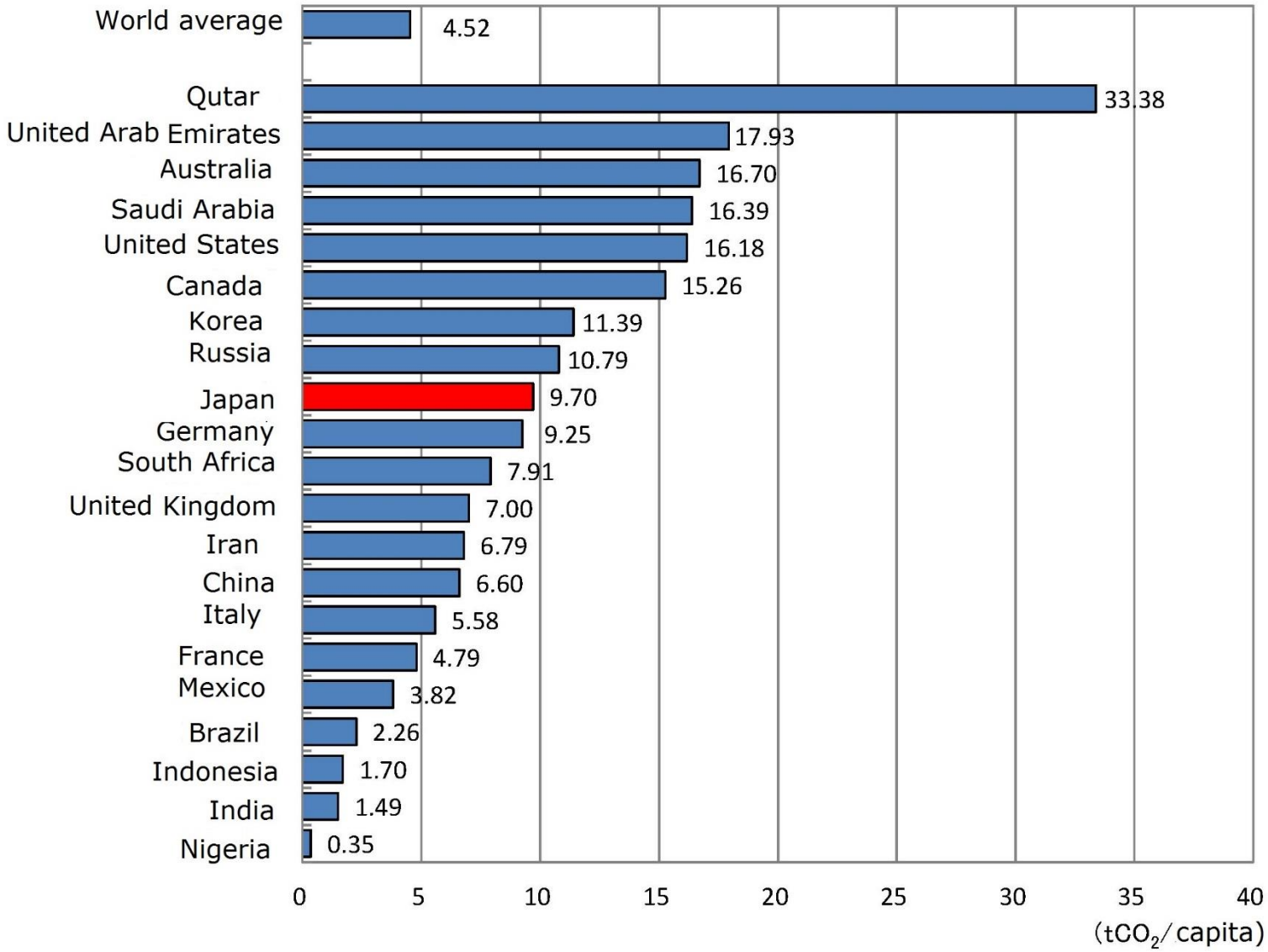
- Loss & damage: Actions to support countries that were damaged by adverse impact of climate change

Global Total CO_2 emission from fuel combustion, 2013



Source : IEA「CO_2 EMISSIONS FROM FUEL COMBUSTION」2015 EDITION

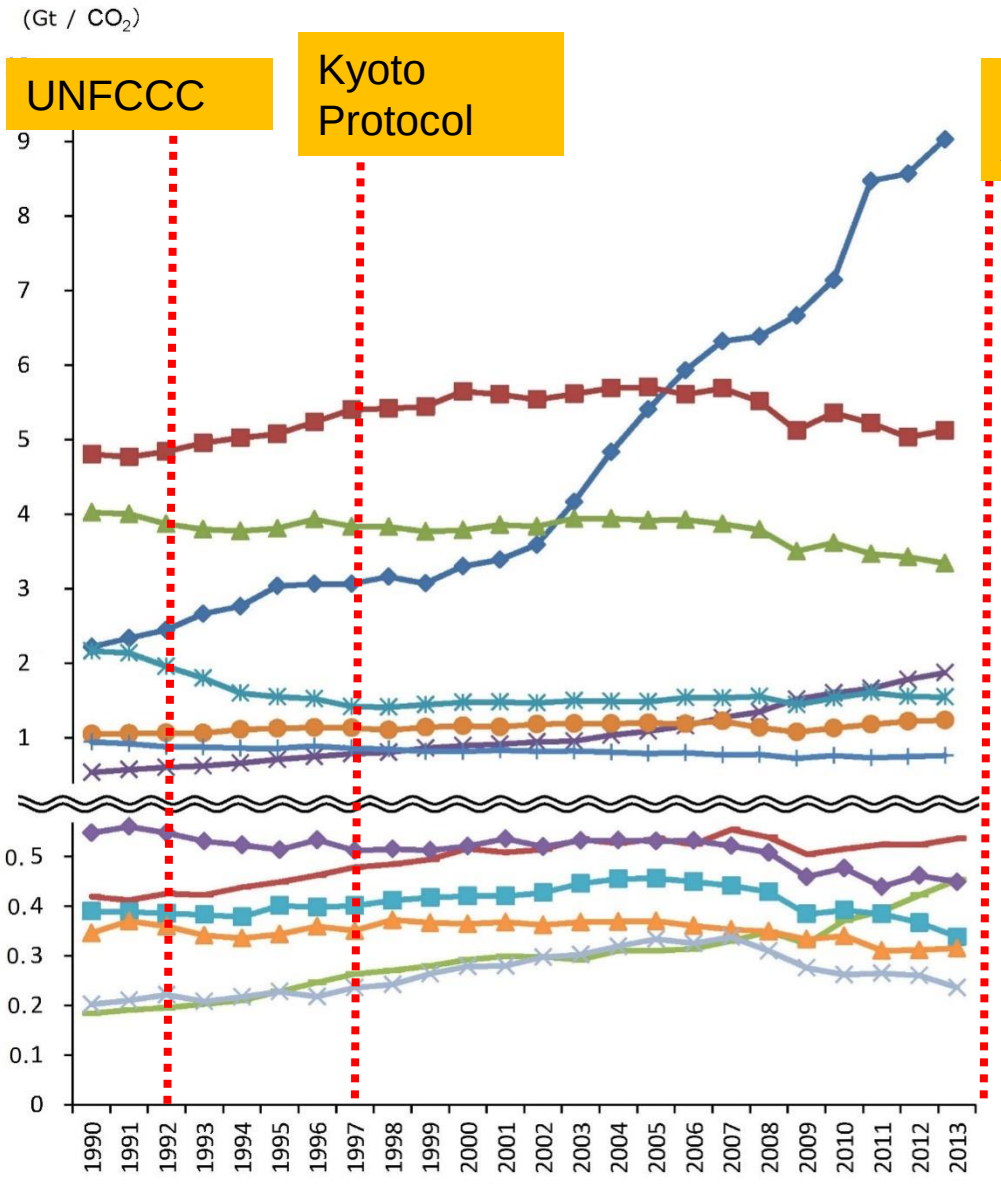
CO2 emission per capita, from fuel combustion, 2013



Sources：IEA「CO_2 EMISSIONS FROM FUEL COMBUSTION」2015 EDITION

Ministry of the Environment, Japan

CO2 emission trend, from fuel combustion, 1990- 2013



(Gt / $-CO_2$)

	1990	2013	Change rate
China	22.2	90.2	+307%
United States	48.0	51.2	+7%
EU28	40.2	33.4	-17%
India	5.3	18.7	+250%
Russia	21.6	15.4	-29%
Japan	10.5	12.4	+18%
Germany ※	9.4	7.6	-19%
Canada	4.2	5.4	+28%
Brazil	1.8	4.5	+146%
UK ※	5.5	4.5	-18%
Italy ※	3.9	3.4	-13%
France ※	3.5	3.2	-9%
Spain ※	2.0	2.4	+16%

※ EU28

Sources : IEA「CO_2 EMISSIONS FROM FUEL COMBUSTION」2015 EDITION
Ministry of the Environment, Japan

UN Framework Convention on Climate Change
(adoption:1992　enter into force:1994)

Article 2 Objective

To achieve stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

Article 4 Commitments

1. All Parties shall develop national inventories, and formulate programmes containing measures to mitigate climate change.
2. Annex I countries (developed countries) shall adopt national policies, recognizing that the return by the end of the present decade to earlier levels of GHG emissions would contribute to modifying longer-term trend.

Annex I countries: Developed countries and countries in transition to a market economy (ex. Russia, Ukraine, Latvia, etc.)

Kyoto Protocol

(adoption:1997 (COP3), enter into force 2005)

Article 3.1

Annex I Parties shall ensure that their aggregate GHG emission do not exceed their assigned amounts, with a view to reducing their overall emissions by at least 5% below 1990 levels between 2008 and 2012.

EU 8%, United States 7%, Japan 6%

Articles 6, 12, 17

Use of Kyoto Mechanisms (joint implementation, Clean Development Mechanisms, emissions trading scheme)

Article 3.3, 3.4

Inclusion of removals by land-use changes

Such as afforestation and reforestation.

Legal nature of institutions / legal bindingness of emission targets

Text (adoption year) (target year)	Legal nature of institution	Legal bindingness of emission targets Scope of countries
UN Framework Convention on Climate Change (1992) (2000)	International treaty	Not legally-bindng. Annex I countries only
Kyoto Protocol (1997: COP3) (2008-2012)	International treaty	Legally-bindng. Annex I countries only
Cancun Agreement (2010: COP16) (2020)	COP decision	Not legally-bindng. Developed countries set absolute emission reduction targets. Developing countries plan implementation of emission mitigation policies
Paris Agreement (2015: COP21) (post-2020)	International treaty	Not legally-bindng. All countries

Inclusiveness v.s. Bindingness v.s. Ambitiousness of emission targets

Paris agreement and COP21 decisions

Element	Paris Agreement	COP decision
Long-term goal (Art. 2)	・Holding the increase in the global average temperature to well below 2ºC above preindustrial levels and to pursue efforts to limit the temperature increase to 1.5ºC (Art. 2)	
Grouping of Annex I and non-Annex I	Deleted	Deleted
Mitigation (Art. 4)	・Achieve a balance between anthropogenic emissions by sources and removals by sinks of GHG in the second half of this century ・ Each Party shall prepare, communicate and maintain successive nationally determined contributions (NDCs) that it intends to achieve. ・Each Party's successive NDC will represent a progression beyond the Parties' then current NDC and reflect its highest possible ambition. ・Each Party shall communicate a NDC every 5 years. ・All Parties should strive to formulate long-term low GHG emission development strategies.	・Urges Parties whose NDC contain a time frame up to 2025 to communicate by 2020 a new NDC. ・Invites Parties to communicate, by 2020, mid-century, long-term low GHG development strategies

Paris agreement and COP21 decisions

Element 8	Paris Agreement	COP decision
Adaptation (Art. 7)	▪ Establish the global goal on adaptation to strengthen resilience. ▪ Each Party shall engage in adaptation planning process and implementation of actions. ▪ Each Party should submit and update an adaptation communication	▪ Requests the Green Climate Fund to expedite support for least developing countries for adaptation
Loss and damage (Art. 8)	▪ The Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts shall be subject to the authority and guidance of CMA	▪ Agrees that Art. 8 does not involve or provide a basis for any liability or compensation.
Finance (Art. 9)	▪ Developed country Parties shall provide financial resources to assist developing country Parties. ▪ Other Parties are encouraged to provide or continue to provide such support voluntarily. ▪ Developed country Parties shall biennially communicate indicative information related to financial support.	▪ Developed countries intend to continue their existing collective mobilization goal through 2025. ▪ Prior to 2025 the CMA shall set a new collective financial goal from a floor of $100 billion per year

Paris agreement and COP21 decisions

Element	Paris Agreement	COP decision
Transparency（Art. 13）	・Transparency framework is established to build mutual trust and confidence and to promote effective implementation.	・Requests the working group in developing modalities and guidelines for reporting and transparency
Global Stocktaking（Art. 14）	・CMA shall periodically take stock of implementation to assess the collective progress towards achieving the purpose of this agreement and its long-term goals. ・CMA shall undertake its first global stocktaking in 2023 and every five years thereafter.	
Enter into force（Art. 21）	・This agreement shall enter into force on the 30th day after the date on which at least 55 Parties to the Convention accounting in total for at least an estimated 55% of the total GHG have deposited their ratification.	
Withdrawal (Art. 28)	・At any time after 3 years from the date on which this Agreement enter into force for a Party, that Party may withdraw from this Agreement . Any such withdrawal shall take effect upon expiry of 1 year from the date of receipt by the depository of the notification of withdrawal.	

After Paris … in 2016

April: Signatory ceremony

May: Analysis of NDCs… not enough to achieve the 2 degrees goal.

Declaration at the Iseshima G7 summit… Heads of states declare that they would strive to have Paris Agreement enter into force as soon as possible, and calls on all Parties to do so striving for a goal of entry in to force in 2016. and also to communicate ambitious mid-term low carbon development strategies well ahead of the 2020 deadline.

September: China and the United States ratified the Paris Agreement.

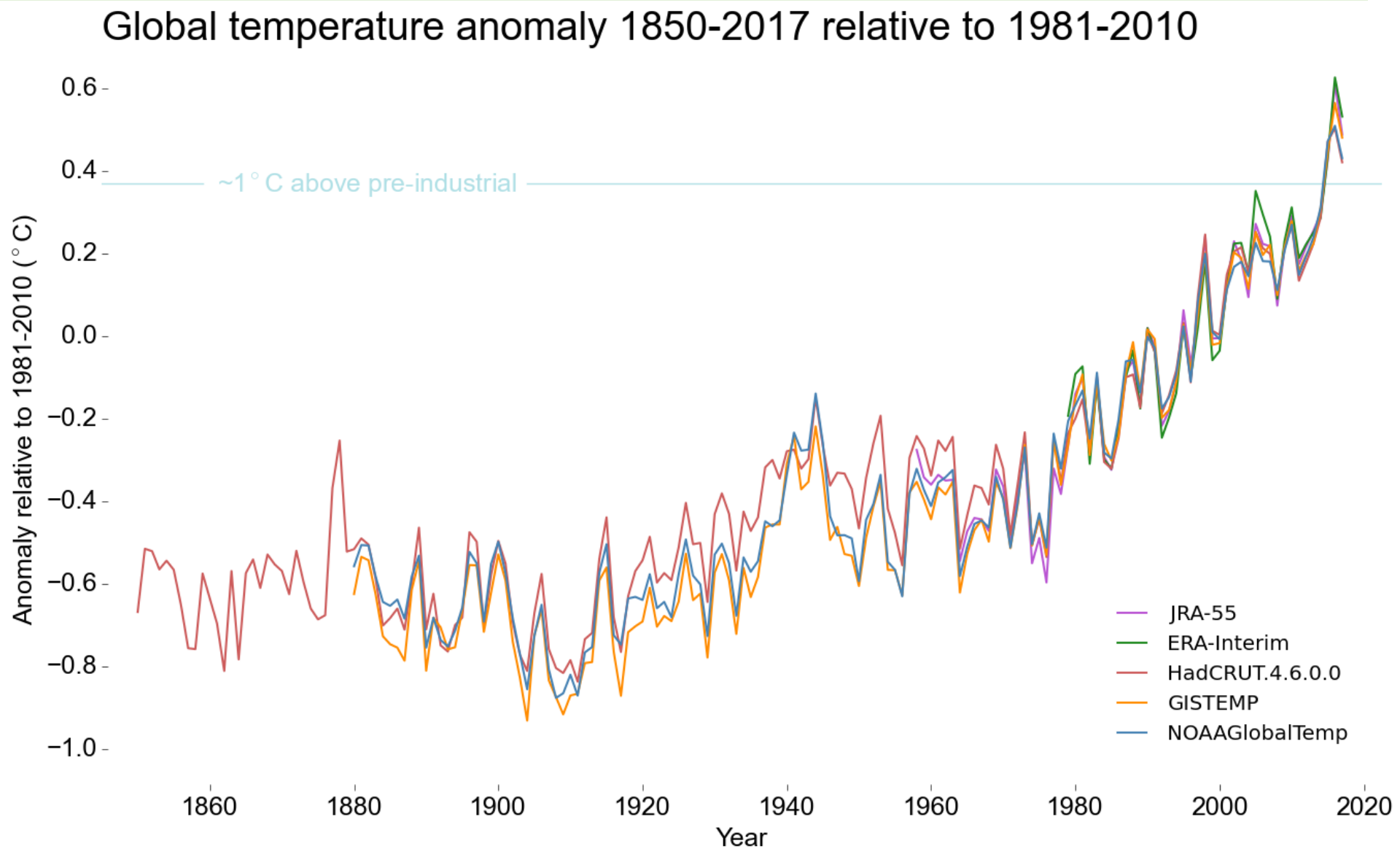
October: EU and other major countries ratified the Paris Agreement

November: Paris Agreement entered into force.

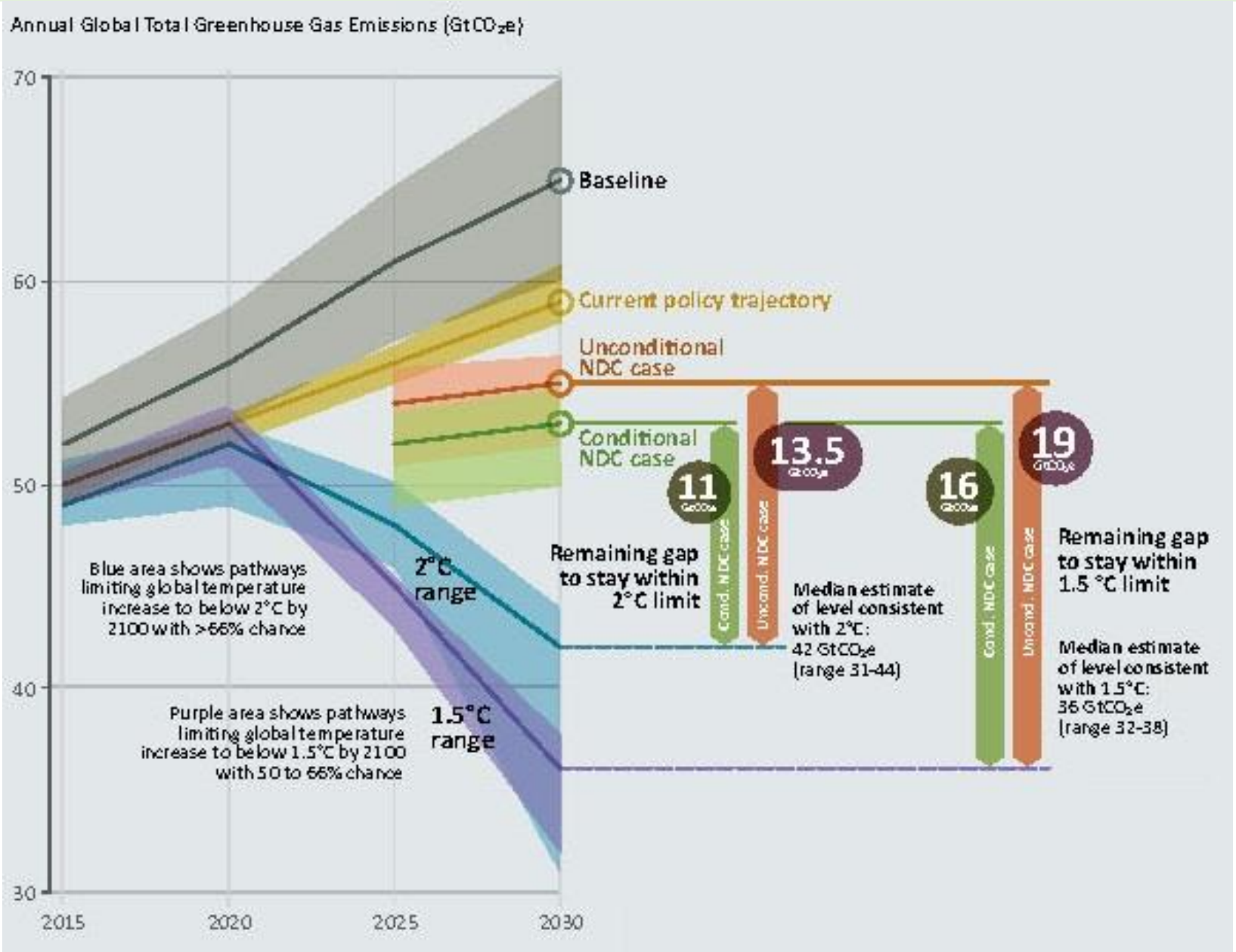
COP22

Decided schedules for future works, including ways to make effective assessments in 2018, and to enhance funding mechanism particularly onto adaptation projects.

Global temperature rise continues（WMO)



UNEP Gap Report Nov. 2017) NDCs not sufficient to reach the 2ºC goal



2. Categorization of Climate Policies, and Implementation in Key Countries

Determination of national emission targets

There are basically two ways to determine emission targets at national level.

- One way is to determine by a top-down approach.

  Determination of emission limitation at global level → emission sharing among countries based on equity principles → national emission target

  The top-down approach allows countries to understand how much emission reduction is necessary to avoid the risk of climate change. In a sense, level set by the top-down approach is a "level that *should* be achieved by the country"

  long-term target such as "80% reduction by 2050" or "2 degrees C"

- The other way is to determine by a bottom-up approach.

  Each sector will be analyzed to see how much emission reduction could be achieved if certain technologies or measures are introduced. All the emission reduction potentials are added up to reach a national level emission reduction target.

  The bottom-up approach allows policy makers to see how much emission reduction is achievable by introduction of policies and measures. In a sense, level set by the bottom-up approach is a "level that *could* be achieved by the country"

Categorization of climate mitigation policies

Countries' climate mitigation policies are not independent of other national agendas. Countries could become ambitious or unwilling to take actions to reduce GHGs.

- Energy policy: coal, oil, natural gas, renewable energy, nuclear
- Economy policy: energy-intensive industry (iron&steel, cement, aluminum, etc.)
- Social policy: Tax neutral policy by using revenue of carbon tax into social security
- Foreign policy: Countries' willingness to be involved in UN activities, etc.

Countries' climate mitigation policies can be categorized by sectors in which GHG emissions occur:

- Energy sector
- Industry and business sector
- Commercial and residential sectors
- Transportation sector
- Agriculture and land-use sectors

Countries' climate policies can also be categorized by type of policy tools.

- Regulatory measures (standards, setting limitations, etc.)
- Economic measures (taxes, subsidies, emissions trading, etc.)
- Information measures (labeling, education, etc.)
- Technology innovation (R&D, public-private partnerships, etc.)

Climate mitigation policies by types of goals

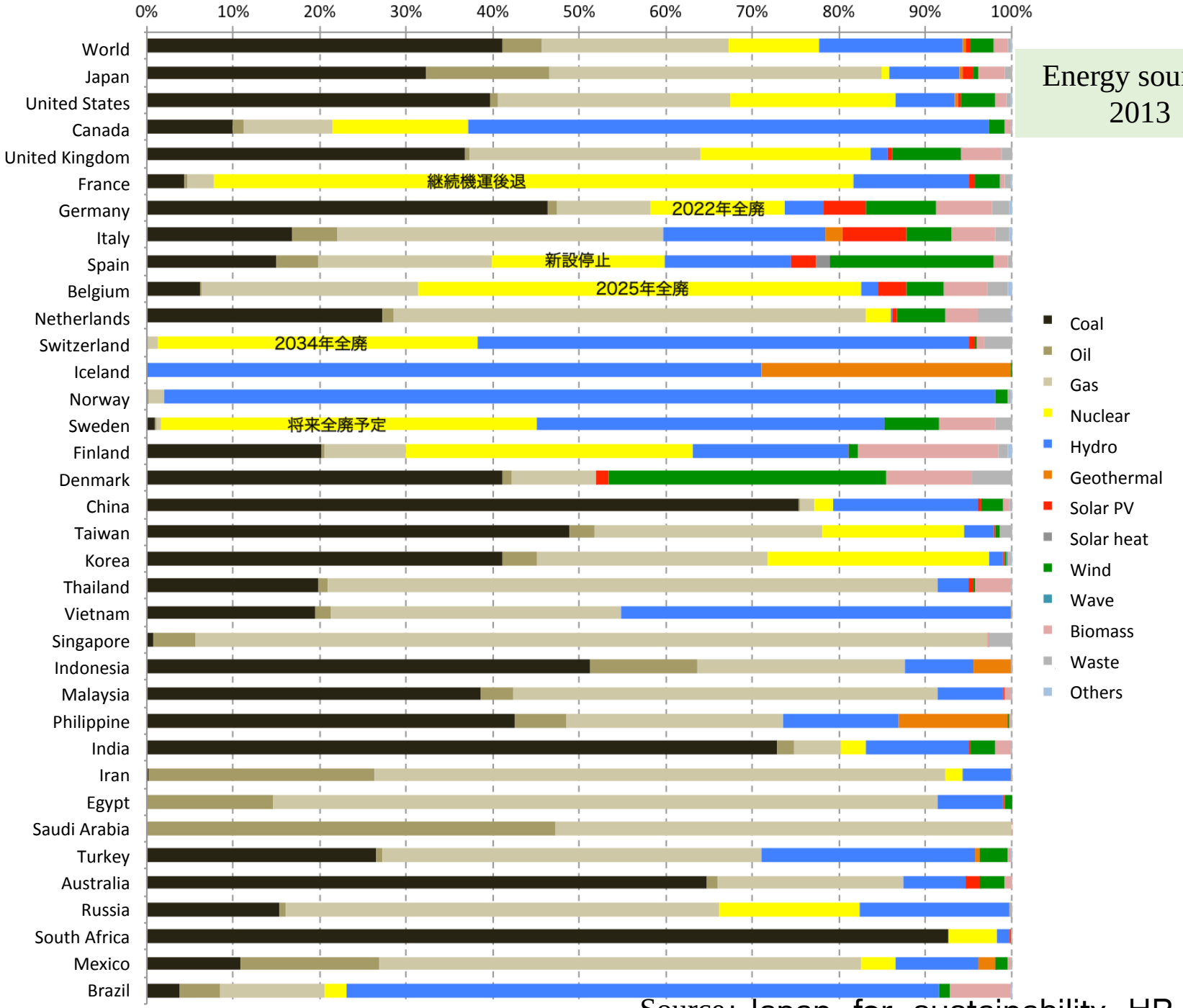
GOAL I: Decarbonization of energy
* Promotion of renewable energy
* Use of CCS for fossil fuel fire power plants
* Electrification of transportation sector

GOAL 2: Improvement of energy efficiency
* Energy efficiency improvements in industry sector
* Energy efficiency improvements in buildings and products
* Energy efficiency in transportation sector (hybrid car, etc)

GOAL 3: Minimizing demand for energy service
* Resource efficiency improvements in industry sector
* Change of lifestyle in households
* Wise use of public transportation and virtual meeting
* Low carbon cities

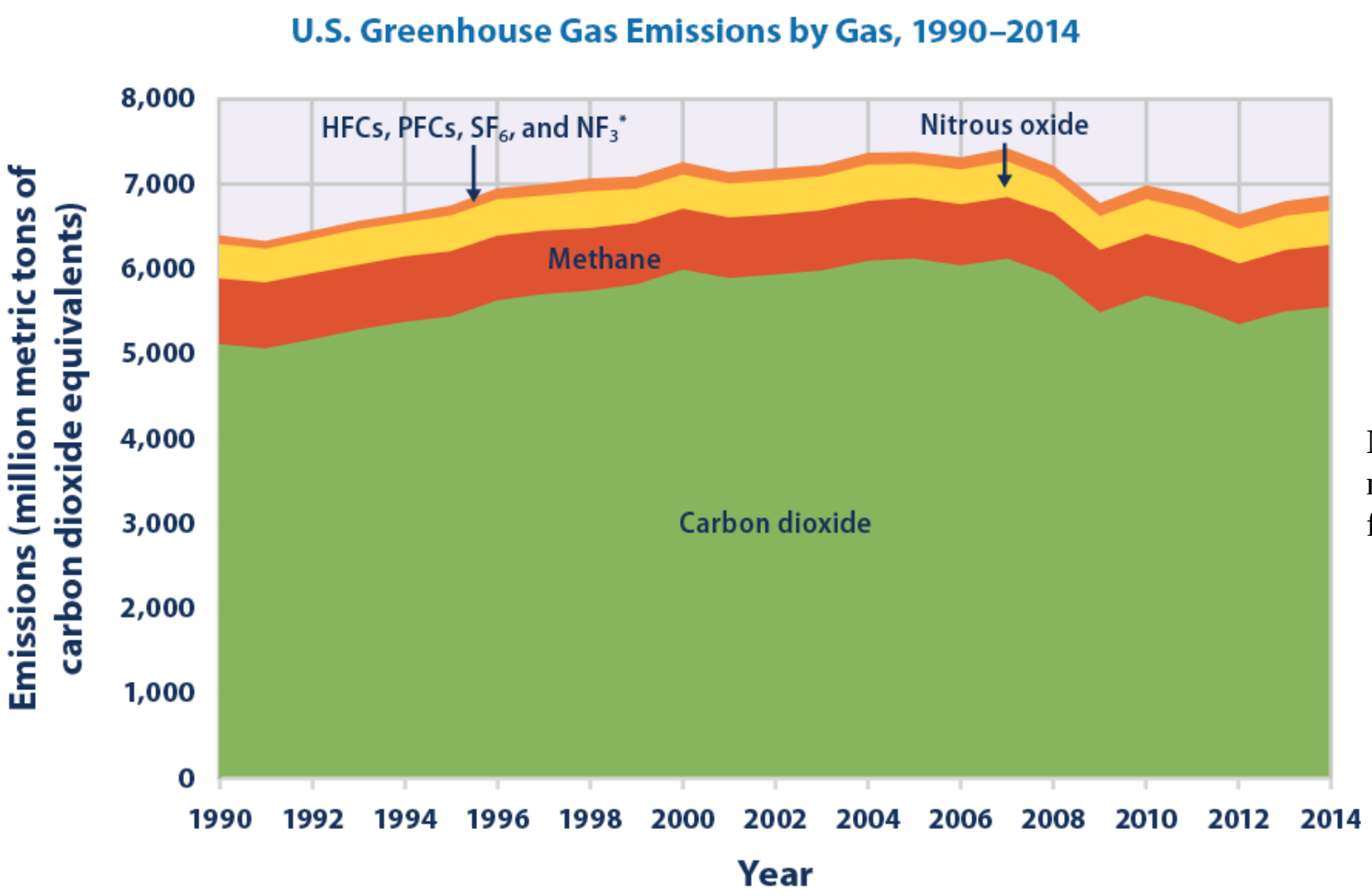
GOAL4: Sequestration by forests and non-CO2 GHG gases
* Forest conservation
* Reducing emissions of methane (agriculture, natural gas sites, etc.)
* Reducing emissions of F-gases (CFC, HFC, HCFC, etc)

Energy sources, 2013



Source：Japan for sustainability HP

The United States



NDC: 26-28% reduction by 2025 from 2005

* HFCs are hydrofluorocarbons, PFCs are perfluorocarbons, SF_6 is sulfur hexafluoride, and NF_3 is nitrogen trifluoride.

Data source: U.S. EPA (U.S. Environmental Protection Agency). 2016. Inventory of U.S. greenhouse gas emissions and sinks: 1990–2014. EPA 430-R-16-002. www.epa.gov/climatechange/ghgemissions/usinventoryreport.html.

For more information, visit U.S. EPA's "Climate Change Indicators in the United States" at www.epa.gov/climate-indicators.

Climate policy in the United States

- Have had a great contribution in accumulation of scientific basis on climate change. Many IPCC authors are from the United States.
- On the other hand, climate policy in the United States has made little progress. This is mainly due to strong objection from coal and oil industries, lobbying the Congressmen to act against any meaningful climate policies.
- United States once supported the Kyoto Protocol during Clinton administration, but Bush administration in 2001 withdrew from the Kyoto Protocol.
- Changes were made under the Obama administration. President Obama utilized administrative authority (Clean Air Act) to regulate CO_2 emissions from automobiles and electricity power sector. President Obama also proposed Clean Power Plan, which regulates CO_2 emissions from coal fire power plants.
- The United States initiated since 2013 a bilateral dialogue with China, which developed into bilateral cooperation to lead the UNFCCC negotiations up to Paris Agreement.
- In 2017, President Trump shifted away from climate change policies. He used to deny scientific knowledge of climate change, but how emphasizes economic burden of reducing GHGs.

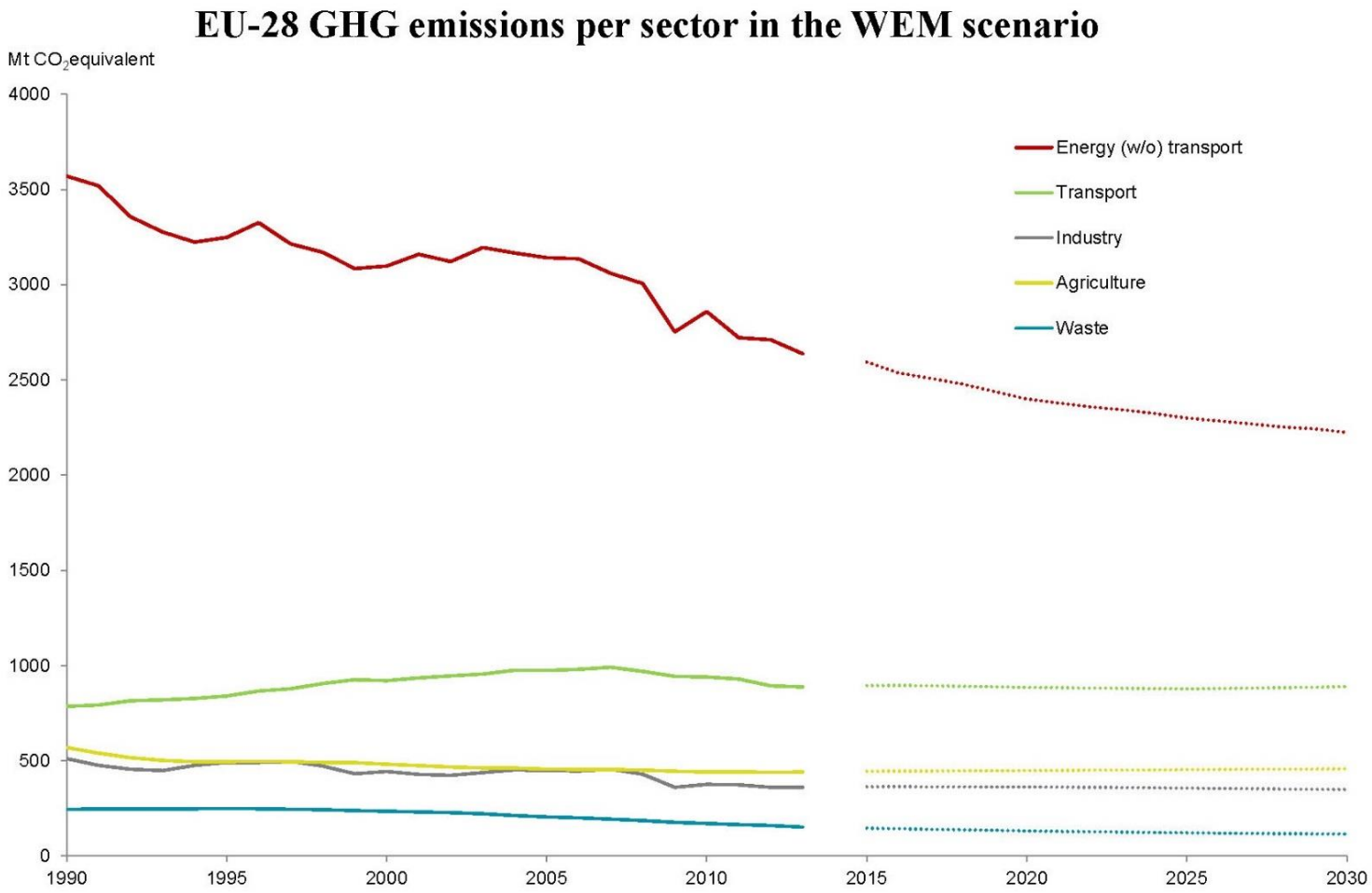
COP23 (Nov. 2017) Two Americas #We are still in

#Wearestillin consists of more than 2500 sub-national actors, including 20 states,110 cities, over 1400 companies.

The group as a whole covers more than half of American citizens and economic activities.

June 2017: Mr. Trump announced willingness to leave the Paris Agreement.

European Union

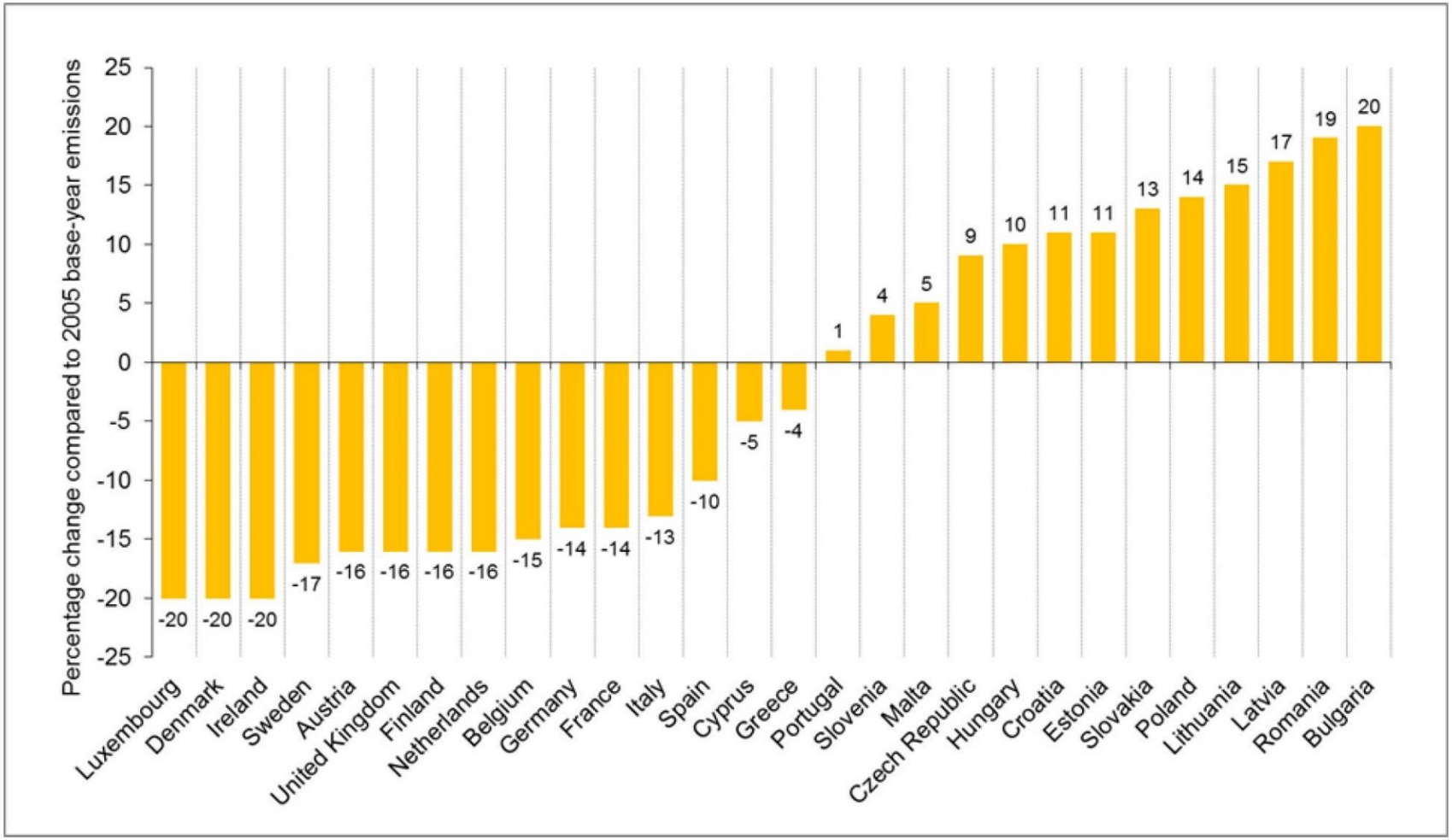


NDC: 40% reduction by 2030 from 1990

Note: The trajectories displayed here are not stacked, i.e. each trajectory refers to the values shown on the y-axis. Values up to 2013 are from the latest available greenhouse gas inventory. Projected values, starting in 2015, stem from Member States submissions under Article 14, MMR.

European Union's climate policy towards 2020 target

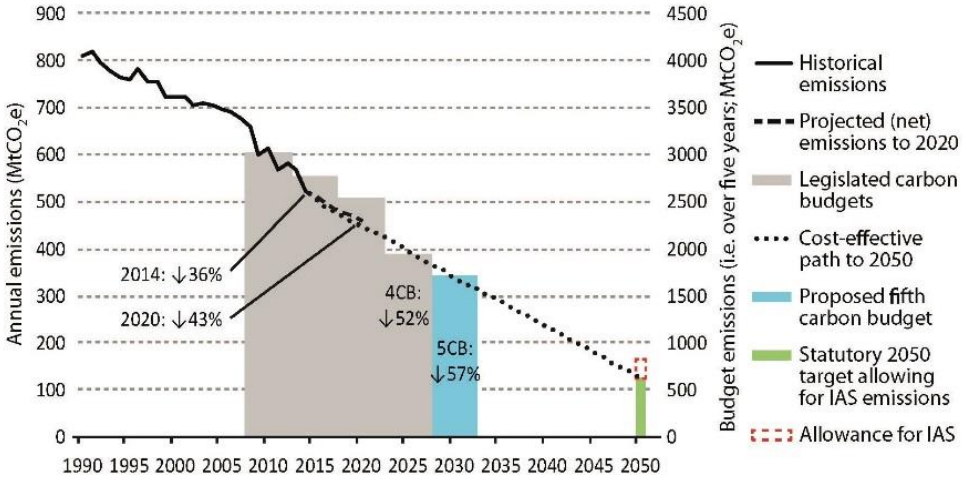
National 2020 GHG emission limits under the ESD, relative to 2005 emissions levels



Source: EU Decision No 406/2009/EC, Annex 2

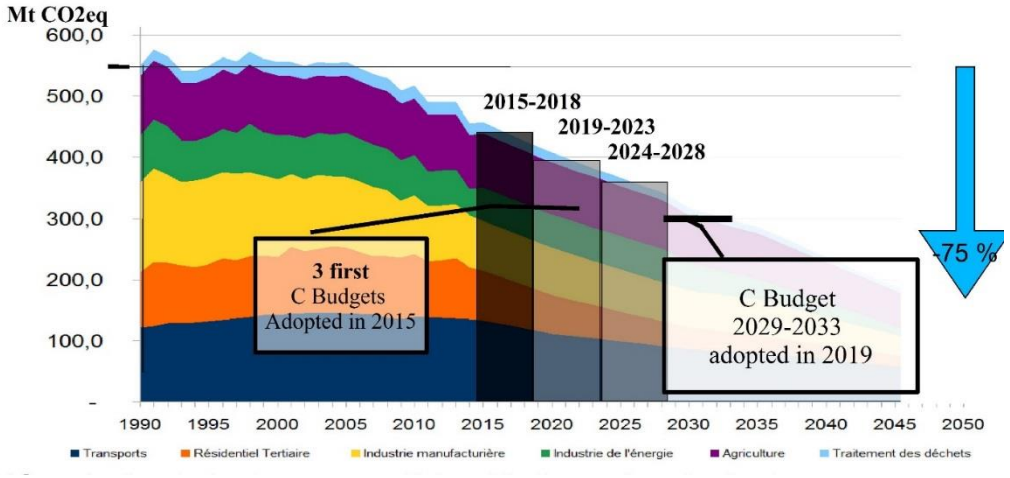
Long-term strategy

Some EU member countries have developed long-term goals, such as GHG emission targets for 2050, and use them to evaluate level of stringency of short- to mid-term targets.

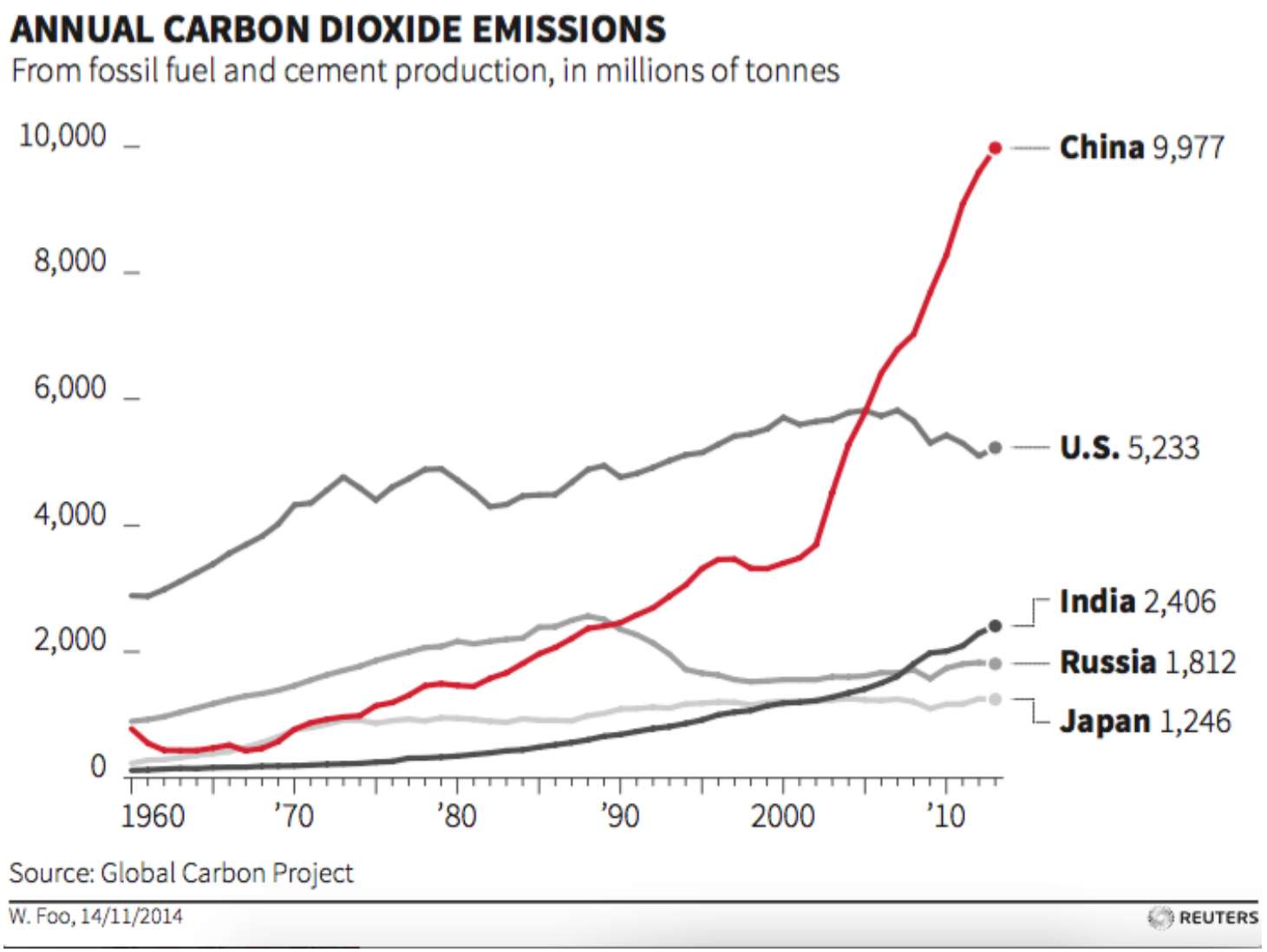


<- United Kingdom

France →

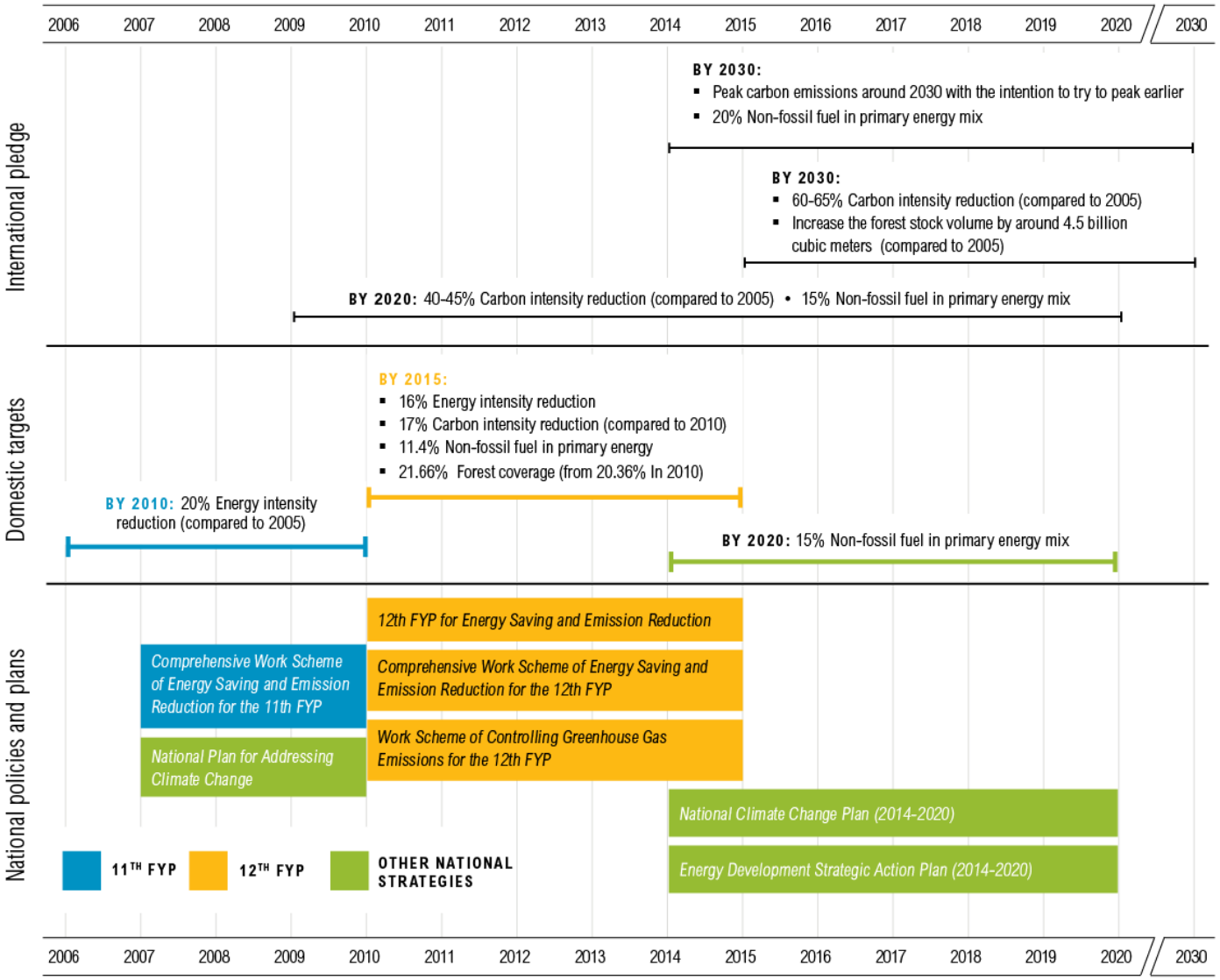


China



NDC: improve CO2 emission per GDP 33.8% lower than 2005; share of non-fossil fuels 11.2%, Forested area increase by 21.6million ha

International Pledges, Domestic Targets, and National Policies



http://ow.ly/SNa0p

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3. Climate Policy Developments in Japan

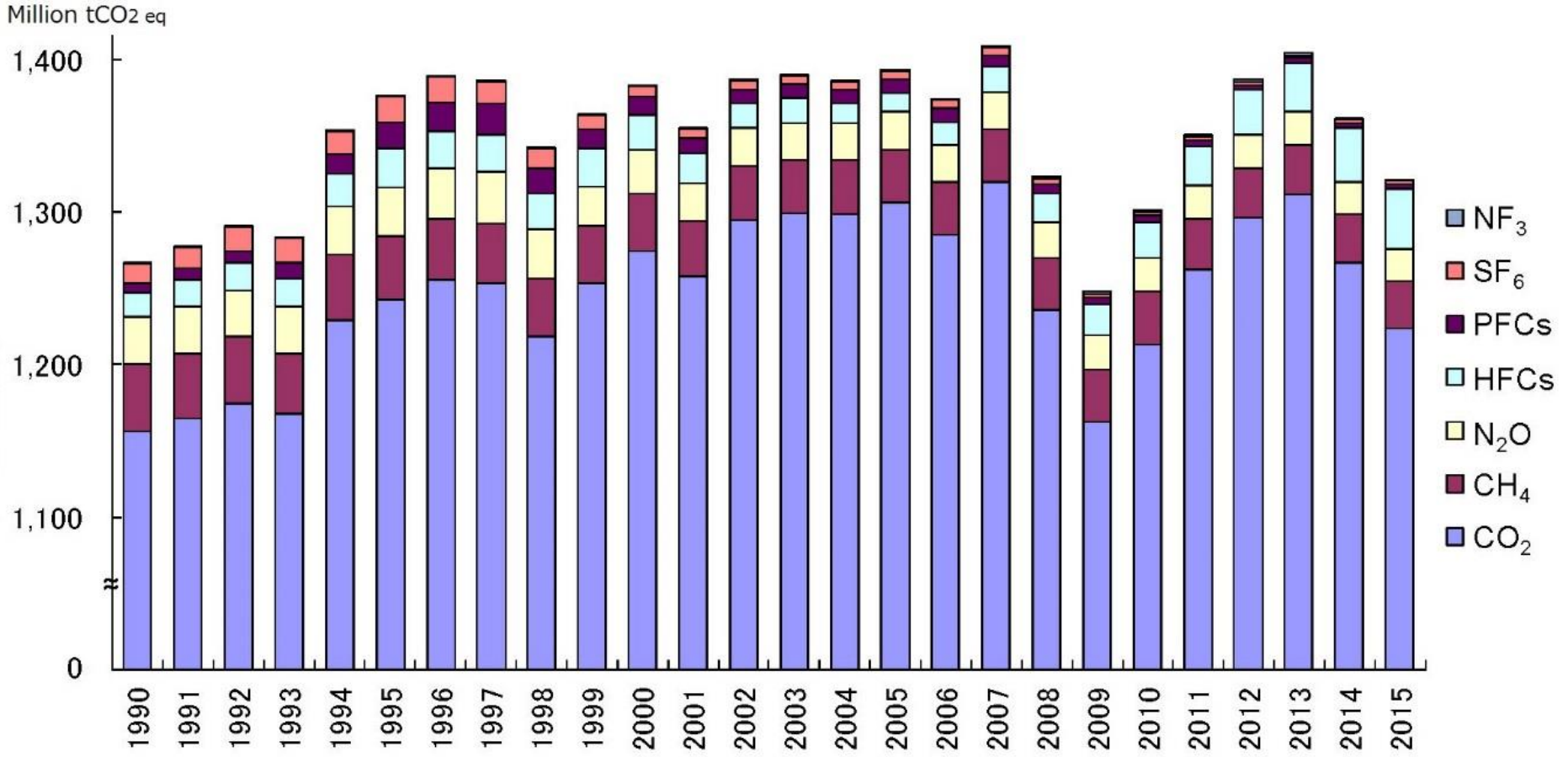
Climate policy developments in Japan

Japan has set emission reduction targets periodically, but emission reduction policies have extensively been focused on improvements in energy efficiency.

Japan's emission targets for GHGs

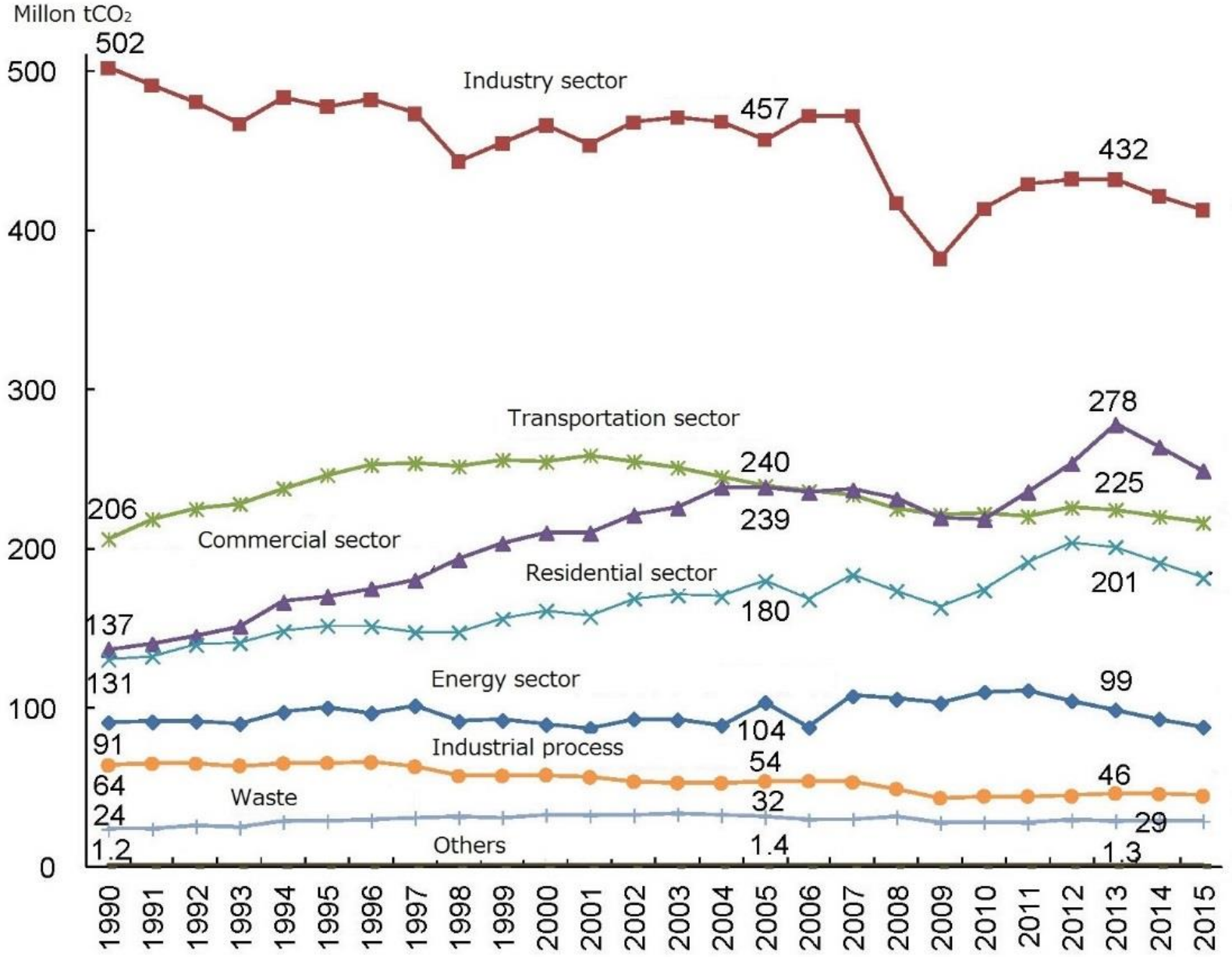
Year of decision	Target year / base year	Level of target/ conditions	Result
1990	2000 / 1990	Stabilization of emission per capita / stabilization of emission if technology innovation occurred	7% increase
1997	2010 / 1990	5% reduction, with differentiation according to per capita and per GDP efficiency level	
1997	2008-2012 / 1990	6% reduction (with utilization of emission trading)	1% increase, but met 6% Kyoto target
2009	2020 / 2005	15% reduction (=8% reduction from 1990)	
2009	2020 / 1990	25% reduction (all major emitters take meaningful commitments)	
2013	2020 / 2005	3.8% reduction (no nuclear power)	
2015	2030 / 2013	26% reduction (nuclear 22%)	

Japan's GHG emission by type of gases



Source: Ministry of the Environment

Japan's GHG emission by sector(categorization by final demand)

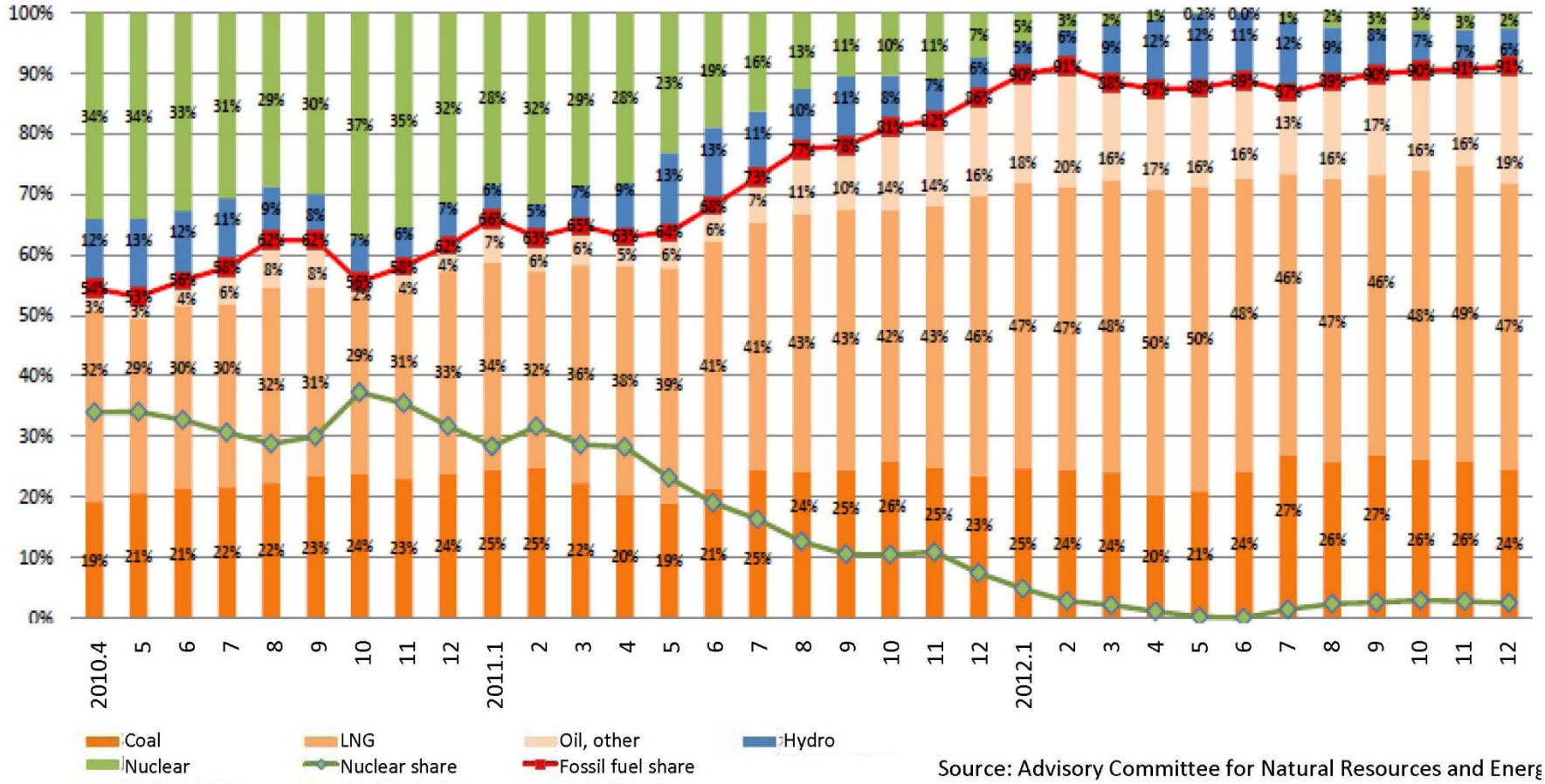


Source: Ministry of the Environment

Change in energy mix for power generation after the earthquake

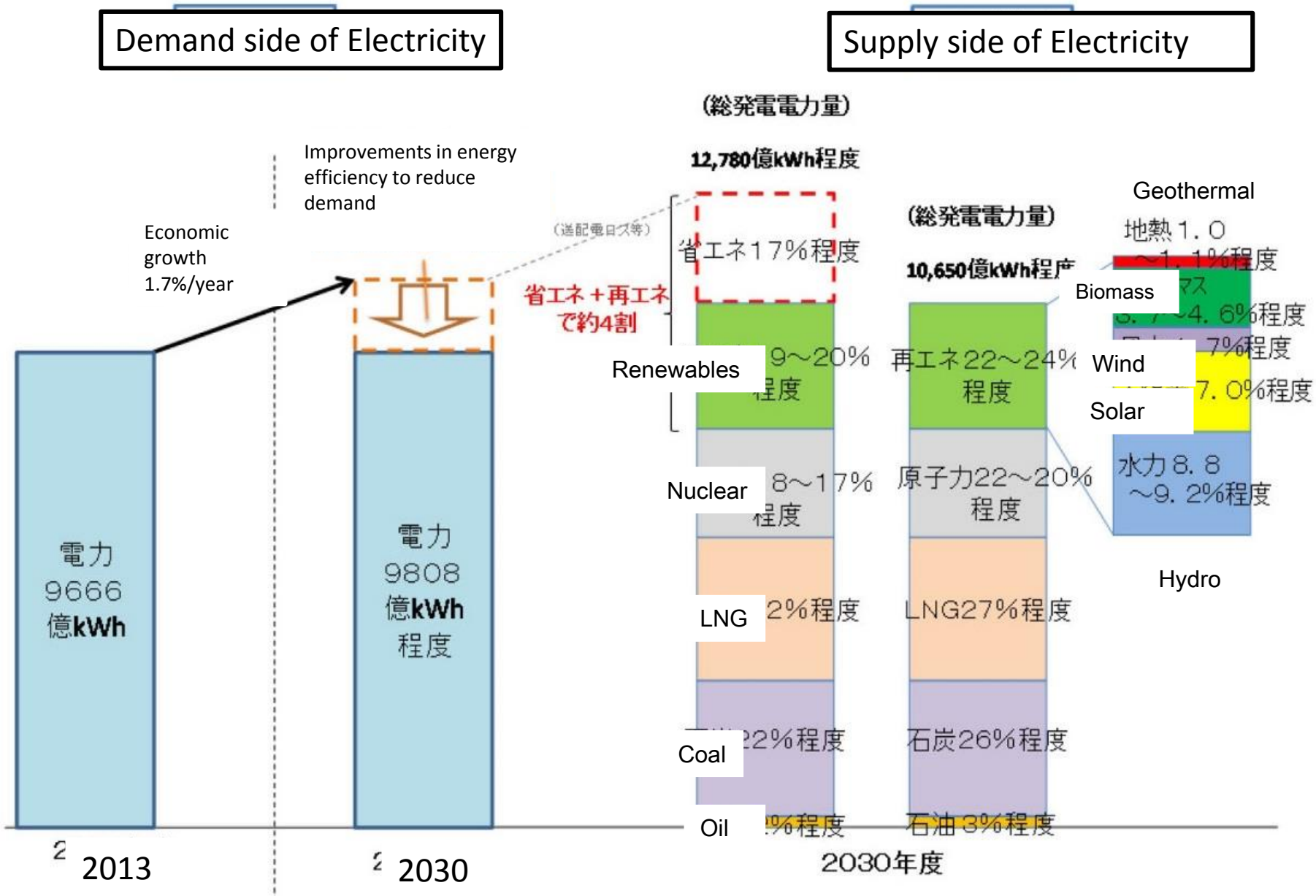
- After the earthquake disaster, nuclear power plants have been shut down for maintenance, and the share of the nuclear power generation dropped drastically.(Oi nuclear power plant No.3 and 4 were restarted in July 2012)
- On the other hand, power generation from fossil fuel reached approximately 90% of total domestic power generation, including 50% from LNG power plant.

Trends in energy mix for power generation (General/Wholesale Electric utility)



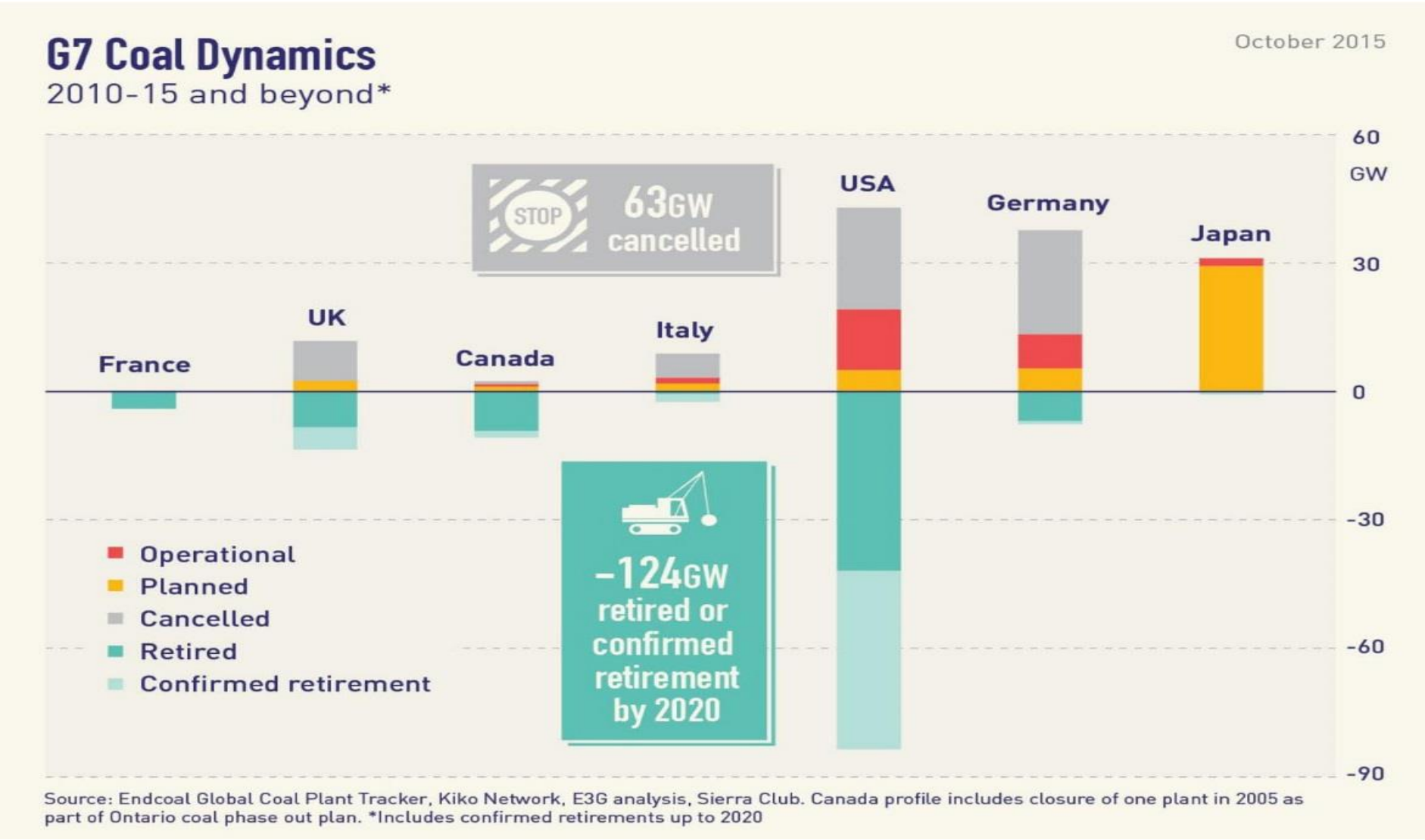
Source: Advisory Committee for Natural Resources and Energ

July 2015 Long-term Energy Demand & Supply Outlook



Source: Gov. of Japan

Use of coal fire power plants in Japan is increasing



Source: E3G (2015)G7 Coal Scorecard Report

GE Targets Net Zero Energy Homes by 2015

imagination at work

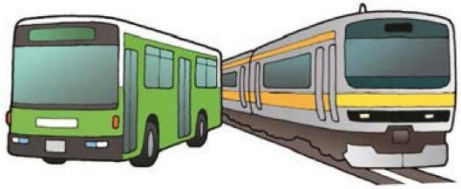
Energy-originated CO_2
(Transport Sector)

Initiatives in the Transport Sector

■ **Promotion of Traffic Flow Management and Promotion of the Environmentally-friendly Usages of Vehicles**

- Promote the environmentally-conscious form of driving by pursuing the diffusion of Eco-drive Management Systems (EMS) for vehicle transport operators
- Promote the smoother traffic flows by Rearranging the traffic environment to be safer and more comfortable for bike users, improving the administration of pricing on highway use, and promoting the introduction of Intelligent Transport System (ITS) which is effective for drivers to select the best routes to their destinations.

■ **Promotion of Public Transport Utilization**



- promote the use of public transport systems through various measures including improving the service and convenience of railways and buses, and promotion of eco-commuting

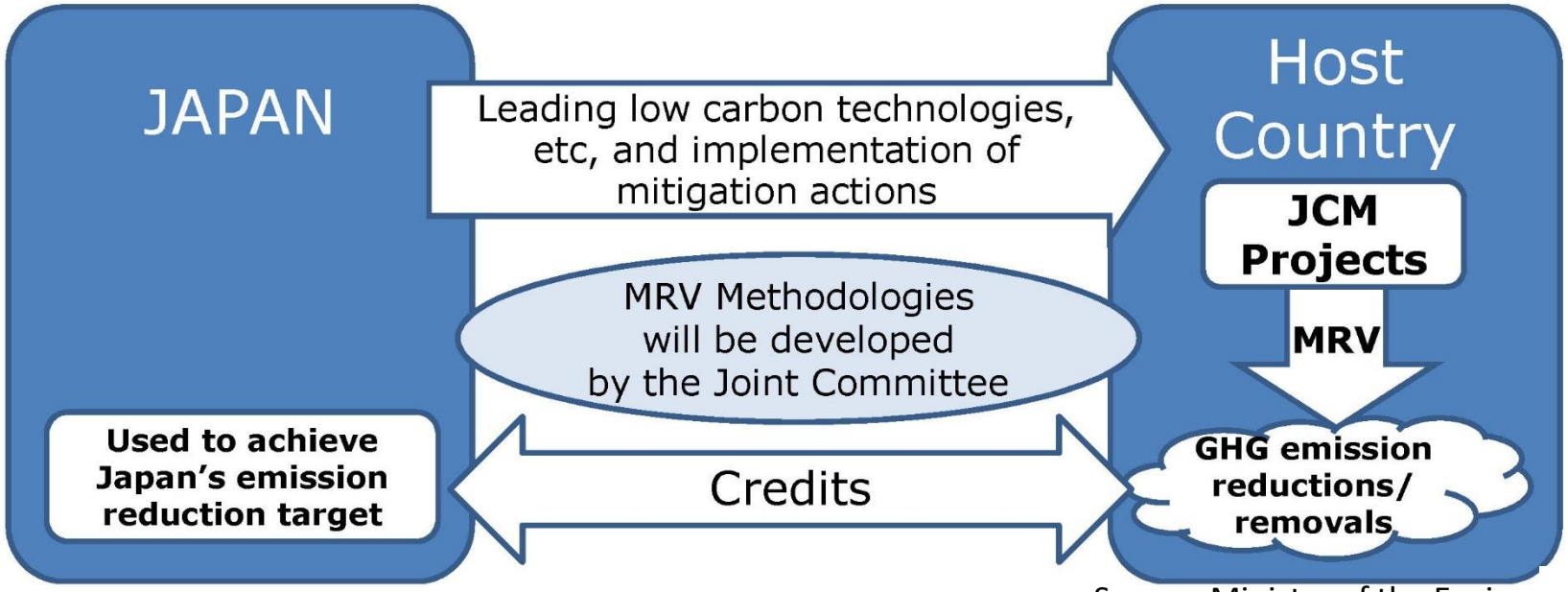
■ **Promotion of Low-Carbonized Transportation through Railway, Vessel, and Aviation**

- Energy saving in domestic vessels through manufacturing of Super Eco-Ships
- Energy saving in domestic aviation through efficient operating method for aircrafts
- Energy saving in railways by introducing highly energy-efficient vehicles and renewable energies in railway facilities

Source: Ministry of the Environment

Basic Concept of the Joint Crediting Mechanism

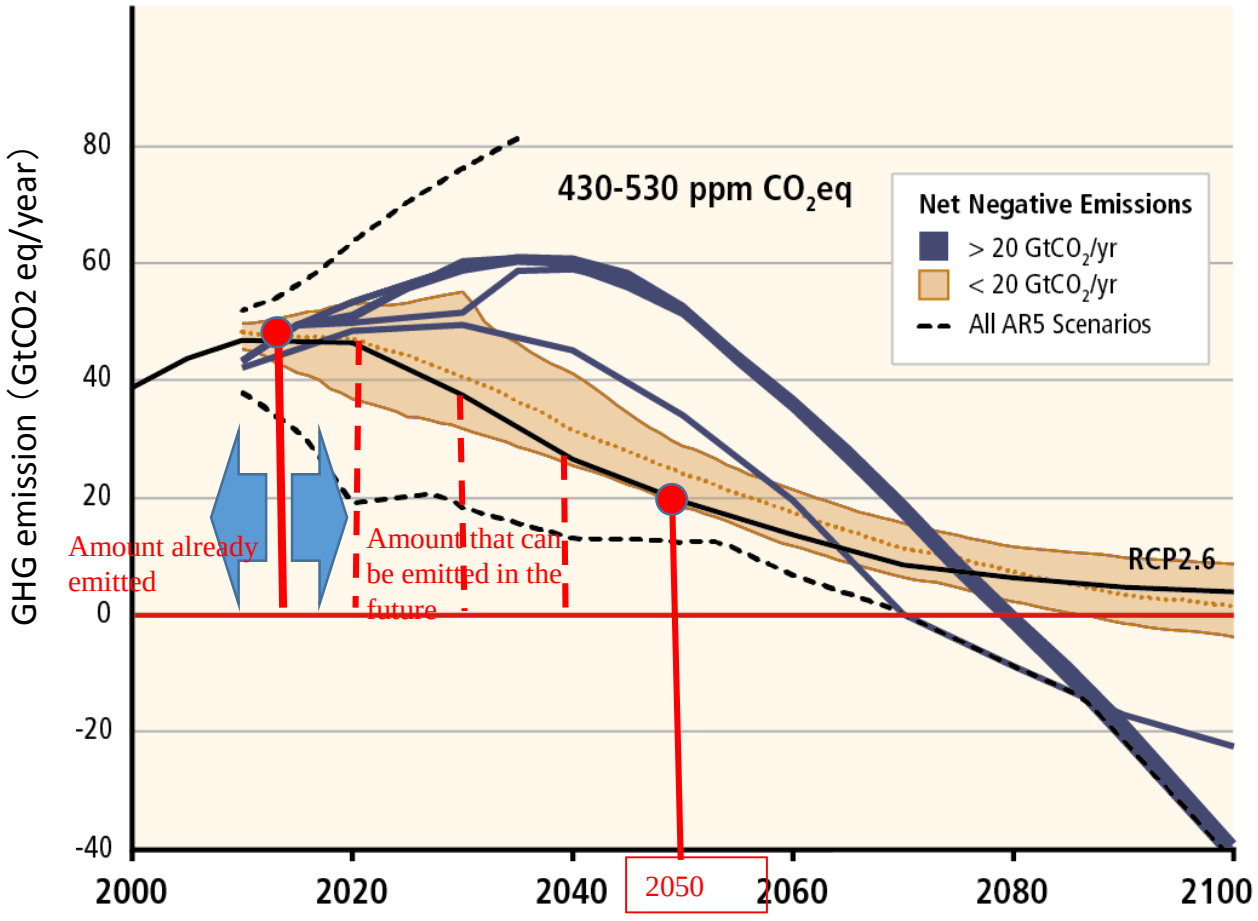
- Facilitating diffusion of leading low carbon technologies, products, systems, services, and infrastructure as well as implementation of mitigation actions, and contributing to sustainable development of developing countries.
- Appropriately evaluating contributions to GHG emission reductions or removals from Japan in a quantitative manner, by applying measurement, reporting and verification (MRV) methodologies, and use them to achieve Japan's emission reduction target.
- Contributing to the ultimate objective of the UNFCCC by facilitating global actions for GHG emission reductions or removals, complementing the CDM.



Source: Ministry of the Environment

4. Prospects for the future

Carbon Budget



Total cumulative global GHG emission since 1870 needs to be limited to 800Gt to achieve the 2℃ goal, but the world has already emitted 531GtC.

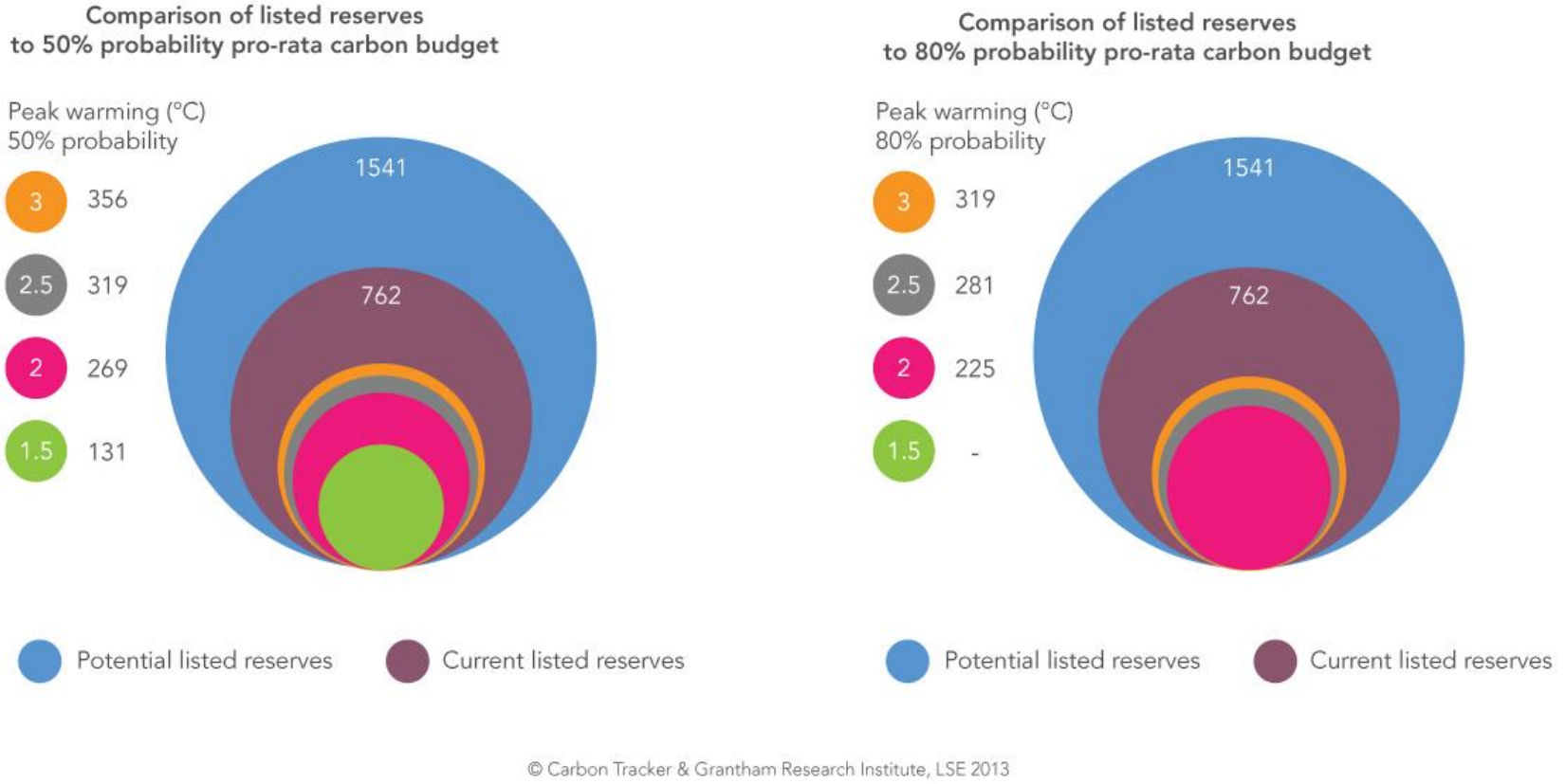
In order to use the remaining carbon budget of 269GtC in the most effective manner to transit to low-carbon society, how much should the world reduce its GHG emission by 2050?

Source : IPCC AR5 WG3 Fig. TS-8

Carbon budget→2050 target→targets for 2030 and 2040 to achieve the 2050 target

Net-zero GHG emission by end of the 21st century

Message sent out by the Paris Agreement is that much of coal and oil reserves must stay underground. The notion “stranded asset” has been widely shared among stakeholders that fossil fuel – based assets might become worthless.



Source : Carbon Tracker

Carbon budget→End of carbon bubble→Stranded assets
→Divestment from fossil fuel projects

Development of divestment movements

2010 Students at Swarthmore College in the United States started a divestment movement. Students in other colleges, including those in *Syracuse and Stanford Universities followed. Local governments such as San Francisco and Seattle also followed.*

2012 Oxford University in the United Kingdom intiated Stranded Assets Programme

HSBC publicized a report: "Coal and Carbon: Stranded Asset Risk Assessment "

2013 Standard & Poors publicized a report on oil companies' future under climate change

2014 The World Bank supported divestments from coal and oil extracting projects

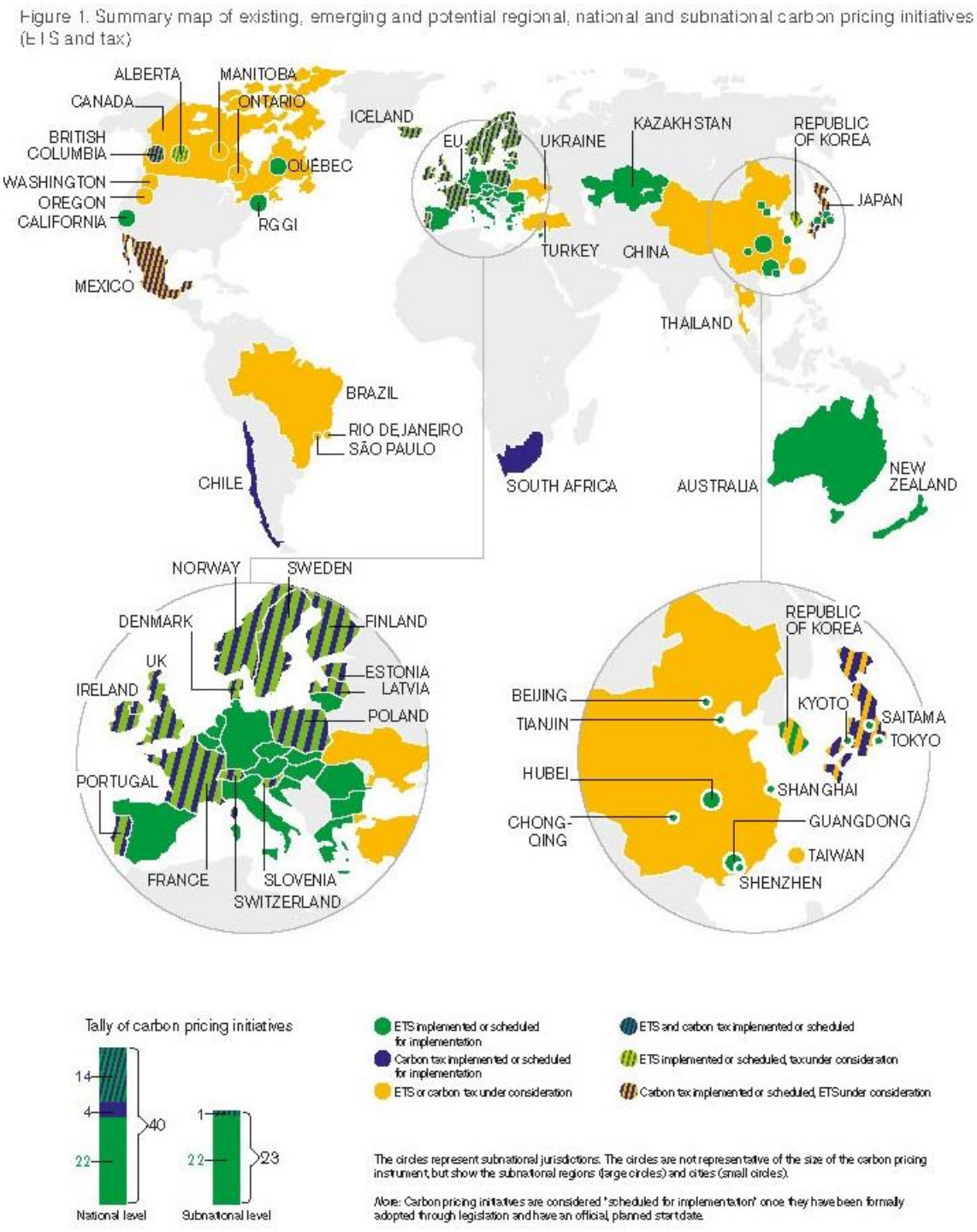
2015 Norway's pension fund（GPFG), Bank of America, etc., determined divestments from fossil fuel projects

Sep. Speech by Mark Carney, Governor of Bank of England "Breaking the Tragedy of the Horizon – climate change and financial stability

Oct. OECD's publication on divestments, 50 billion USD in 2014 increase into 2.6 trillion USD in the first half of 2015. Further increased to 3.4 trillion by COP21 in 2015.

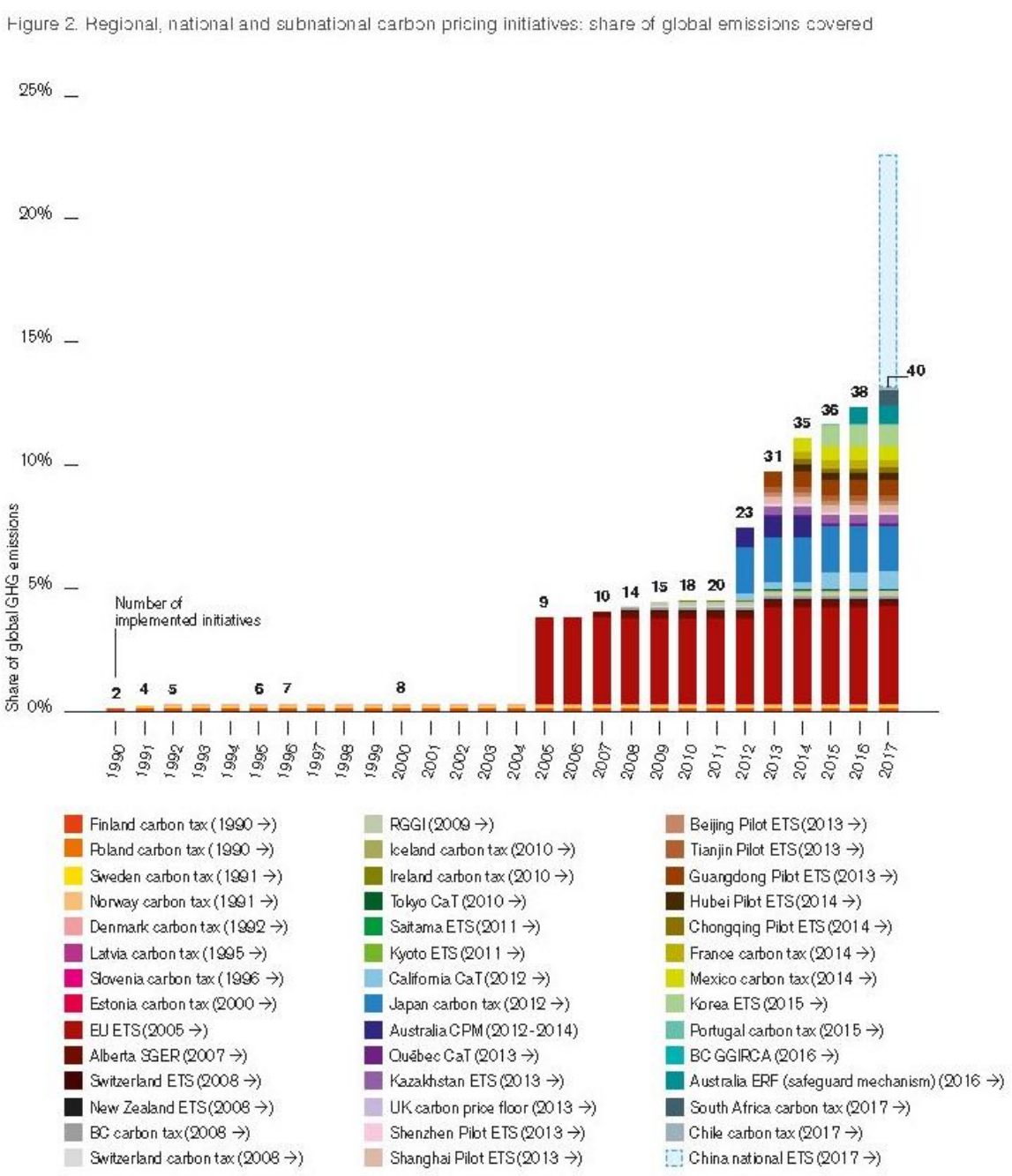
Engagement is a way to change companies' behavior by stockholders and investors before they start divesting from the company. Movements of engagement is said to have started from California. By COP21, more than 106 companies from more than 20 countries declared that they would facilitate engagements.（Caring for Climate (UNEP etc.), 2015）

Carbon pricing around the world



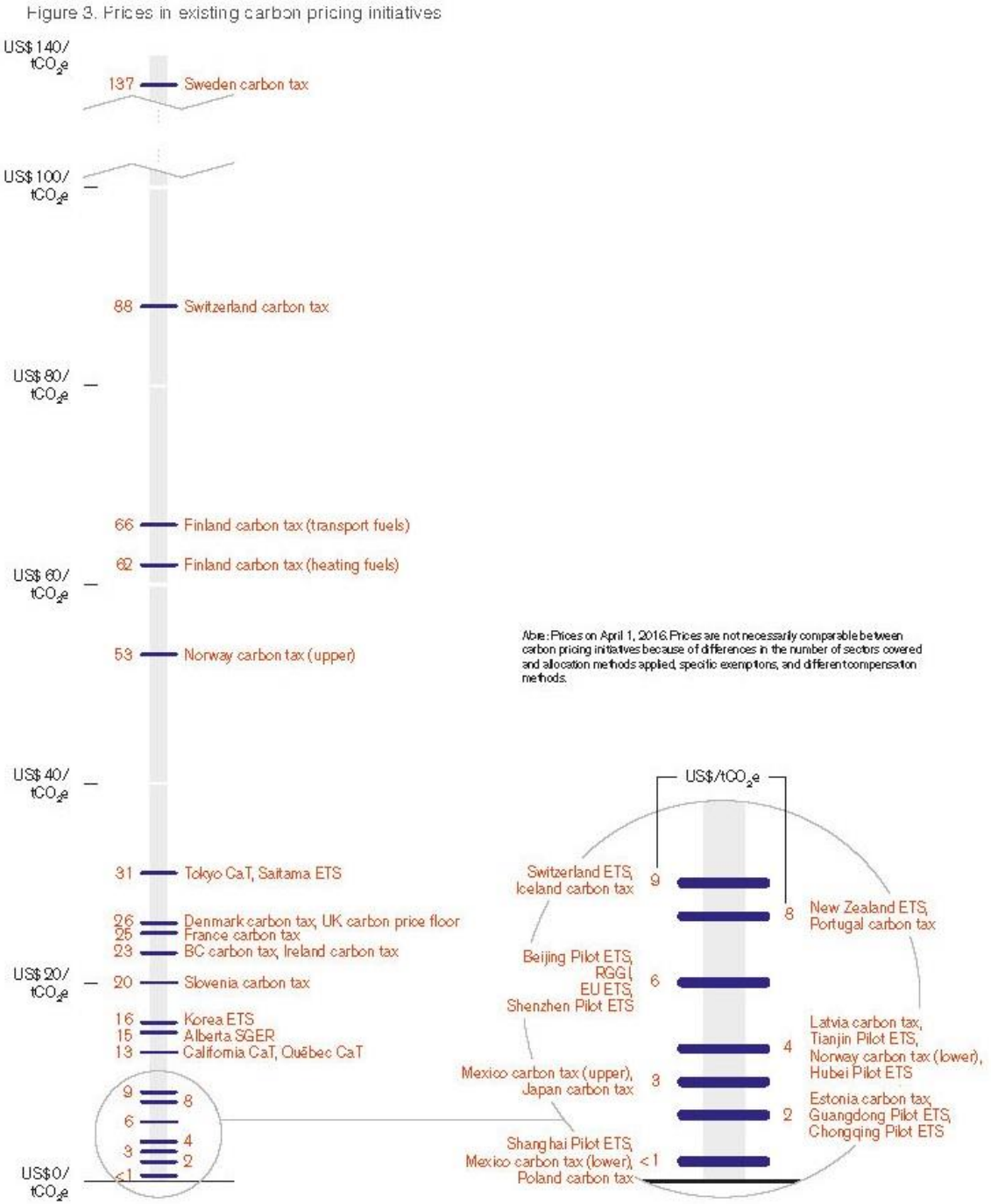
Source : World Bank and Ecofys (2016) Carbon Pricing Watch

Coverage by carbon pricing



Source: World Bank and Ecofys (2016) Carbon Pricing Watch

Carbon tax rates



Source: World Bank and Ecofys (2016) Carbon Pricing Watch

Conclusions

- Impact of climate change, such as extreme weather, is increasing around the world. Paris Agreement was a turning point for international community to voluntarily change the direction of development towards decarbonization. The trend will not change, but needs to speed up in order to meet the long-term goal of 2 or 1.5 degrees C.

- Countries have their respective national circumstances to implement climate mitigation policies. Thus, the best mix of policies differ from one country to another. Nevertheless, the policy package should include variety of measures such as regulatory measures, economic measures, and information measures.

- Role of non-state actors is increasing. Actions taken by local governments, cities, and business and industry sectors, should be well recognized.

Thank you!

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